Tamkang University Academic Year 112, 1st Semester Course Syllabus

Course Title	GEOMETRIC ANALYSIS	Instructor	PAK-TUNG HO
Course Class	TSMAM1A MASTER'S PROGRAM, DEPARTMENT OF MATHEMATICS, 1A	Details	◆ General Course ◆ Selective ◆ 1st Semester
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Expose students to cutting-edge research areas in mathematics and data science, and enhance their ability to pursue professional careers or advanced studies in related specializations.

Subject Departmental core competences

A. Proficiency with fundamental knowledge in mathematics or statistics.(ratio:20.00)

B. Ability to recognize, formulate, and solve mathematics problems.(ratio:20.00)

C. Ability to conduct independent research and communicate mathematical or statistical concepts clearly and effectively.(ratio:20.00)

D. Ability to transform real-world problems into mathematical or statistical models. (ratio:20.00)

E. Ability to collect, analyze, interpret data, and present findings with visualization.(ratio:20.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:12.00)
2. Information literacy. (ratio:12.00)
3. A vision for the future. (ratio:12.00)
4. Moral integrity. (ratio:12.00)
5. Independent thinking. (ratio:12.00)
6. A cheerful attitude and healthy lifestyle. (ratio:12.00)
7. A spirit of teamwork and dedication. (ratio:12.00)
8. A sense of aesthetic appreciation. (ratio:16.00)

Course Introduction	Understanding the conecpts in Geometric Analysis. I plan to talk about the concepts of differentiable manifolds, differentiable maps, tangent spaces, Riemannian metrics, connections, etc.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.

II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.

III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	Learning the concepts in Geometric Analysis	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDE	12345678	Lecture, Discussion	Testing, Study Assignments, Discussion(including classroom and online)

Course Schedule

Week	Date	Course Contents	Note
1	112/09/11 ~ 112/09/17	Introducing the definition of differentiable manifold	
2	112/09/18 ~ 112/09/24	Example of differentiable manifolds	
3	112/09/25 ~ 112/10/01	Example of differentiable manifolds	
4	112/10/02 ~ 112/10/08	Example of differentiable manifolds	
5	112/10/09 ~ 112/10/15	Differentiable maps	

6	112/10/16 ~ 112/10/22	Differentiable maps	
7	112/10/23 ~ 112/10/29	Differentiable maps	
8	112/10/30 ~ 112/11/05	Tangent vector	
9	112/11/06 ~ 112/11/12	Tangent spaces	
10	112/11/13 ~ 112/11/19	Tangent space	
11	112/11/20 ~ 112/11/26	Riemannian metric	
12	112/11/27 ~ 112/12/03	Riemannian metric	
13	112/12/04 ~ 112/12/10	Connection	
14	112/12/11 ~ 112/12/17	Connection	
15	112/12/18 ~ 112/12/24	Curvature	
16	112/12/25 ~ 112/12/31	Curvature	
17	113/01/01 ~ 113/01/07	Curvature	
18	113/01/08 ~ 113/01/14	Curvature	

Key capabilities	self-directed learning Problem solving
Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)
Distinctive teaching	
Course Content	Logical Thinking
Requirement	

Textbooks and Teaching Materials	Using teaching materials from other writers:Textbooks
References	Riemannian Geometry, Do Carmo
Grading Policy	◆ Attendance： 20.0 % ◆ Mark of Usual： % ◆ Midterm Exam： % ◆ Final Exam： % ◆ Other〈Assignment〉：80.0 %
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**